REMARKS

Claims 6 and 10 have been amended to more clearly define Applicants' invention, reciting that product, ethyl acetate, is recycled as an azeotroping agent. Support for the amendment can be found, for example, at page 6, lines 24 to 26, and page 7, lines 4 to 6 of the specification. No new matter has been added. Claims 6 to 11 are pending. Claims 6 and 10 are independent.

Rejection under 35 U.S.C. 103(a)

Claims 6 to 11 have been rejected over United States Patent No. 5,231,222 to *Papa et al.* ("*Papa*") combined with United States Patent No. 5,248,427 to *Spiske et al.* ("*Spiske*"). Claims 6 and 10 are independent, and are accordingly discussed separately below.

As amended, the claims better differentiate over the art and are believed to put this case in condition for allowance and/or in better condition for Appeal. This Amendment is not believed to raise new issues after Final Action and its entry is thus requested.

Independent Claim 6 and claims that depend therefrom

Applicants have discovered a process for producing ethyl acetate which includes directing at least a portion of the organic phase rich in ethyl acetate to the reaction zone to act as an azeotroping agent. *See* amended independent Claim 6.

Papa does not teach or suggest directing at least a portion of the organic phase rich in ethyl acetate to the reaction zone to act as an azeotroping agent. Specifically, *Papa* discloses:

> In general it is also preferred to add some water to the distillation column to aid in forming the product ester-water azeotrope, since the amount of water normally distilled from the reactor is not generally sufficient to ensure a satisfactory aqueous azeotrope with the product ester. *See* Papa at Col. 7, lines 1 to 6.

Indeed in *Papa*, the stated azeotroping agent is water. Instead, in independent Claim 1 of pplicants' invention, the organic phase rich in ethyl acetate, namely the product of the

esterification reaction is directed to the reaction zone to act as an azeotroping agent. Specifically, Applicants state:

> the use of line 30 in this manner...while still providing the necessary azeotroping agent to the reaction zone (See page 6, lines 24 to 26 of the specification and **Figure 1**).

Papa does not disclose ethyl acetate as an azeotroping agent.

Spiske does not cure the deficiencies of *Papa* because *Spiske* does not teach or suggest use of ethyl acetate as an azeotroping agent. Specifically, *Spiske* teaches a "recycle stream 10" of unconverted carboxylic acid and unconverted alcohol. *See Spiske* at Col. 3, lines 6 to 8. One of ordinary skill in the art would not be motivated by *Papa* or *Spiske* or their combination to direct the organic phase rich in ethyl acetate to the reaction zone to act as an azeotroping agent.

Independent Claim 10 and claims that depend therefrom

Applicants have also discovered a process for producing ethyl acetate which includes directing at least a portion of the organic phase rich in ethyl acetate to a membrane separation unit to form a dried organic stream, and directing at least a portion of the dried organic stream to a distillation means to act as an azeotroping agent. *See* amended independent Claim 10.

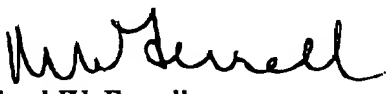
As discussed above, *Papa* combined with *Spiske* does not teach or suggest ethyl acetate as an azeotroping agent. Therefore, it follows that *Papa* combined with *Spiske* does not teach or suggest ethyl acetate as an azeotroping agent in a distillation tower. Specifically, Applicants state:

> [t]he dried organic stream can then be either processed further to produce pure ethyl acetate in the finishing column 38, or this dried stream can be used as an azeotroping agent in distillation tower 2. (*See* page 7, lines 4 to 6 of the specification and **Figure 1**).

Moreover, there is no motivation in the teachings of *Papa* combined with *Spiske* to motivate one of ordinary skill in the art to direct a portion of a dried organic stream including ethyl acetate to a distillation means to act as an azeotroping agent. Thus, without the benefit of Applicants' invention, one of ordinary skill in the art would not arrive at the process of independent Claims 6 and 10.

For at least these reasons, independent Claims 6 and 10 and claims that depend therefrom are patentable over *Papa* combined with *Spiske*.

Respectfully submitted,



Michael W. Ferrell
Attorney for Applicants
Reg. No. 31,158

Ferrells, PLLC
P.O. Box 312
Clifton, Virginia 20124-1706
Telephone: 703-266-3000
Facsimile: 703-266-6000
June 30, 2003

APPENDIX A
(clean version to Claims 6 and 10)

6. (Amended) A process for producing ethyl acetate comprising:

(a) contacting acetic acid and ethanol in a reaction zone in the presence of a catalyst;

(b) directing vapors formed in the reaction zone to a distillation means to form an azeotrope containing 10 wt. % or less of water;

(c) condensing the azeotrope to form an condensate;

(d) separating the condensate into an organic phase rich in ethyl acetate and an aqueous phase rich in water; and

(e) directing at least a portion of the organic phase rich in ethyl acetate to the reaction zone to act as an azeotroping agent.

10. (Amended) A process for producing ethyl acetate comprising:

(a) contacting acetic acid and ethanol in a reaction zone in the presence of a catalyst;

(b) directing vapors formed in the reaction zone to a distillation means to form an azeotrope containing 10 wt. % or less of water;

(c) condensing the zoetrope to form an condensate;

(d) separating the condensate into an organic phase rich in ethyl acetate and an aqueous phase rich in water;

(e) directing at least a portion of the organic phase rich in ethyl acetate to a membrane separation unit to form a dried organic stream; and

(f) directing at least a portion of the dried organic stream to the distillation means to act as an azeotroping agent.

APPENDIX B
(marked-up version to Claims 6 and 10)

6. (Amended) A process for producing ethyl acetate comprising:

(a) contacting acetic acid and ethanol in a reaction zone in the presence of a catalyst;

(b) directing vapors formed in the reaction zone to a distillation means to form an azeotrope containing 10 wt. % or less of water;

(c) condensing the azeotrope to form an condensate;

(d) separating the condensate into an organic phase rich in ethyl acetate and an aqueous phase rich in water; and

(e) directing at least a portion of the organic phase rich in ethyl acetate to the reaction zone to act as an azeotroping agent.

10. (Amended) A process for producing ethyl acetate comprising:

(a) contacting acetic acid and ethanol in a reaction zone in the presence of a catalyst;

(b) directing vapors formed in the reaction zone to a distillation means to form an azeotrope containing 10 wt. % or less of water;

(c) condensing the zoetrope to form an condensate;

(d) separating the condensate into an organic phase rich in ethyl acetate and an aqueous phase rich in water;

(e) directing at least a portion of the organic phase rich in ethyl acetate to a membrane separation unit to form a dried organic stream; and

(f) directing at least a portion of the dried organic stream to the distillation means to act as an azeotroping agent.